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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/527,902	10/02/2006	Wolf Steffens	20020304-2	9079

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EXAMINER	
ZHANG, YUANDA	

ART UNIT	PAPER NUMBER
2828	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/527,902	STEFFENS ET AL.	
	Examiner	Art Unit	
	YUANDA ZHANG	2828	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 March 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4,7,10-12 and 17-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4,7,10-12 and 17-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *14 March 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *03/14/06*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement (IDS) submitted on 03/14/06 has been considered by the Examiner.

Preliminary Amendment

2. The Examiner acknowledges and accepts the preliminary amendment filed on 03/14/06.

Claims 1-4, 7, 10-12 and 17-19 are amended;

Claims 5, 6, 8, 9, 13-16 are cancelled; and

Claims 1-4, 7, 10-12 and 17-19 are currently pending.

Claim Objections

3. Claim 19 is objected to because of the following informalities: Claim 19 is believed to be more correctly read to replace “an” before “cavity” in line 3 with “a”. Appropriate correction is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-4, 7, 11, 12, 17 and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Edelstein et al. (US Patent 5,017,806).

6. Regarding claim 1, Edelstein discloses a method of manipulating a laser source (OPO 10, fig. 1, col. 3 lines 34-37), comprising the steps of: analyzing an optical signal generated by the laser source (detecting an output spectrum 84 of the laser source respectively through photodiodes 86 and 88 to generate two signals, fig. 1, col. 6 line 64 - col. 7 line 1), evaluating on the basis of the analysis an actual indicator corresponding with an actual value of a tuning velocity of the laser source (determining a difference of the two signals by a feedback circuit 94, fig. 1, col. 7 lines 1-4), comparing the actual indicator with a desired indicator corresponding with a desired value of the tuning velocity to detect a deviation of the actual value of the tuning velocity from the desired value of the tuning velocity (comparing the difference of the two signals with an adjustable bias voltage 96 to obtain an error signal, fig. 1, col. 7 lines 4-9), and compensating the deviation, if any, by manipulating at least one parameter influencing the signal of the laser source (compensating the deviation by supplying an error signal to a piezoelectric transducer 58 through a high gain amplifier 98 for changing the length of the cavity to restore the wavelength of the oscillator signal, col. 7 lines 9-17).

7. Regarding claim 2, Edelstein discloses the step of analyzing the optical signal comprises the steps of: letting a first part of the signal (a first signal detected by the photodiode 86, fig. 1) interfere with a second part of the signal (a second signal detected by the photodiode 88, fig. 1) resulting in a superimposed signal (a difference of the two signals), with the first part being delayed with respect to the second part (the first signal detected by the photodiode 86 is a delay of the second signal detected by the photodiode 88 in the spectrum 84, fig. 1), and detecting the power of the

superimposed signal (determining a difference of the two signals by a feedback circuit 94, fig. 1, col. 7 lines 1-4).

8. Regarding claim 3, Edelstein discloses evaluating the actual indicator by: measuring as the actual indicator a frequency of oscillations of the detected power (detecting an output spectrum 84 of the laser source respectively through photodiodes 86 and 88 to generate two signals, fig. 1, col. 6 line 64 - col. 7 line 1).

9. Regarding claim 4, Edelstein discloses comparing the actual indicator with a desired indicator by mixing the actual indicator with the desired indicator (comparing the difference of the two signals with an adjustable bias voltage 96 to obtain an error signal, fig. 1, col. 7 lines 4-9).

10. Regarding claim 7, Edelstein discloses compensating the deviation if any by manipulating as a parameter a length of a cavity of the laser source (compensating the deviation by supplying an error signal to a piezoelectric transducer 58 through a high gain amplifier 98 for changing the length of the cavity to restore the wavelength of the oscillator signal, col. 7 lines 9-17).

11. Regarding claim 11, Edelstein discloses an apparatus for manipulating a laser source (OPO 10, fig. 1, col. 3 lines 34-37), comprising: an analyzer (a feedback circuit 94, fig. 1, col. 7 lines 1-4) for analyzing an optical signal (a light spectrum 84 of the laser source, fig. 1, col. 6 lines 64-66) generated by the laser source, evaluating on the basis of the analysis an actual indicator corresponding with an actual value of a tuning velocity of the laser source (determining a difference of the two signals by the feedback circuit 94, fig. 1, col. 7 lines 1-4), and comparing the actual indicator with a desired

indicator corresponding with a desired value of the tuning velocity to detect a deviation of the actual value of the tuning velocity from the desired value of the tuning velocity (comparing the difference of the two signals with an adjustable bias voltage 96 to obtain an error signal, fig. 1, col. 7 lines 4-9), and a compensator (a piezoelectric transducer 58, fig. 1, col. 6 lines 59-64) connected to the analyzer for compensating the deviation if any by manipulating at least one parameter influencing the signal of the laser source (compensating the deviation by supplying an error signal to a piezoelectric transducer 58 through a high gain amplifier 98 for changing the length of the cavity to restore the wavelength of the oscillator signal, col. 7 lines 9-17).

12. Regarding claim 12, Edelstein discloses an electrical signal generator (a high gain amplifier 98, fig. 1, col. 7 lines 4-9) for supplying the desired indicator to the analyzer by generating as the desired indicator a frequency corresponding to the desired tuning velocity.

13. Regarding claim 17, Edelstein discloses a manipulator (a piezoelectric transducer 58, fig. 1, col. 6 lines 59-64) for manipulating as a parameter a length of a cavity of the laser source, the manipulator being controlled by the analyzer.

14. Regarding claim 19, Edelstein discloses a piezo-electric element (a piezoelectric transducer 58, fig. 1, col. 6 lines 59-64) acting on a cavity end element of the cavity for compensating a slow deviation if any by mechanically changing an optical path length of the cavity.

> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the

> applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

15. Claims 1, 10 and 11 are rejected under 35 U.S.C. 102(e) as being anticipated by Stolte et al. (US PG Pub 2002/0149779 A1).

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

16. Regarding claim 1, Stolte discloses a method of manipulating a laser source (TLS 10, fig. 2, [0023]), comprising the steps of: analyzing an optical signal generated by the laser source (detecting optical signals by detectors 140, 150 and 160 from MFI 130 and an absolute wavelength measuring unit 40, fig. 2, [0024] and [0025]), evaluating on the basis of the analysis an actual indicator corresponding with an actual value of a tuning velocity of the laser source (evaluating the data from the detectors 140, 150 and 160 to obtain determined wavelength values and known absolute wavelength values by a controller 170, fig. 2, [0027]), comparing the actual indicator with a desired indicator corresponding with a desired value of the tuning velocity to detect a deviation of the actual value of the tuning velocity from the desired value of the tuning velocity (comparing the determined wavelength values with the absolute wavelength values by an evaluation unit 200, fig. 2, [0011] and [0031]), and

compensating the deviation, if any, by manipulating at least one parameter influencing the signal of the laser source (compensating the deviation by determining one or more offset or correction values for correcting the determined wavelength values, [0011]).

17. Regarding claim 10, Stolte discloses a software program or product, preferably stored on a data carrier ([0016] and claim 10), for executing the method of: analyzing an optical signal generated by the laser source (detecting optical signals by detectors 140, 150 and 160 from MFI 130 and an absolute wavelength measuring unit 40, fig. 2, [0024] and [0025]), evaluating on the basis of the analysis an actual indicator corresponding with an actual value of a tuning velocity of the laser source (evaluating the data from the detectors 140, 150 and 160 to obtain determined wavelength values and known absolute wavelength values by a controller 170, fig. 2, [0027]), comparing the actual indicator with a desired indicator corresponding with a desired value of the tuning velocity to detect a deviation of the actual value of the tuning velocity from the desired value of the tuning velocity (comparing the determined wavelength values with the absolute wavelength values by an evaluation unit 200, fig. 2, [0011] and [0031]), and compensating the deviation, if any, by manipulating at least one parameter influencing the signal of the laser source (compensating the deviation by determining one or more offset or correction values for correcting the determined wavelength values, [0011]), when run on a data processing system such as a computer (implicitly taught by the software product, [0016] and claim 10).

18. Regarding claim 11, Stolte discloses an apparatus for manipulating a laser source (TLS 10, fig. 2, [0023]), comprising: an analyzer (MFI 130, fig. 2, [0023] - [0025])

for analyzing an optical signal generated by the laser source, evaluating on the basis of the analysis an actual indicator corresponding with an actual value of a tuning velocity of the laser source (evaluating the data from the detectors 140, 150 and 160 to obtain determined wavelength values and known absolute wavelength values by a controller 170, fig. 2, [0027]), and comparing the actual indicator with a desired indicator corresponding with a desired value of the tuning velocity to detect a deviation of the actual value of the tuning velocity from the desired value of the tuning velocity (comparing the determined wavelength values with the absolute wavelength values by an evaluation unit 200, fig. 2, [0011] and [0031]), and a compensator (an evaluation unit 200, fig. 2, [0011] and [0031]) connected to the analyzer for compensating the deviation if any by manipulating at least one parameter influencing the signal of the laser source.

Claim Rejections - 35 USC § 103

19. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

20. The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

21. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Edelstein et al. in view of Froggatt et al. (US Patent 6,426,496 B1) (IDS filed on 03/14/06).

22. Regarding claim 10, Edelstein has disclosed the method of manipulating a laser source outlined in the rejection to claim 1 above. Edelstein does not explicitly disclose a software program or product, preferably stored on a data carrier, for executing the method when run on a data processing system such as a computer. Froggatt discloses a similar method of manipulating a laser source (fig. 1 and col. 1 line 55 - col. 2 line 6) executed as software when run on a computer (col. 4 lines 34-36). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the method of manipulating a laser source of Edelstein with executing as software when run on a computer as taught by Froggatt in order to obtain a fast and accurate compensation.

23. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Edelstein et al. in view of Graves (US Patent 3,965,440).

24. Regarding claim 18, Edelstein has disclosed the apparatus for manipulating a laser source outlined in the rejection to claim 17 above. Edelstein does not disclose the manipulator further comprises: an electro-optical modulator in the path of the beam in the cavity for compensating a fast deviation if any by electro-optically changing an optical path length of the cavity. Graves discloses a tunable laser oscillator (fig. 1 and

col. 2 lines 43-44) comprising an electro-optical modulator (13, fig. 1, col. 2 lines 50-55) in the path of the beam in the cavity for compensating a fast deviation if any by electro-optically changing an optical path length of the cavity (col. 2 lines 6-9 and col. 3 lines 65-67). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the apparatus of Edelstein with the electro optic phase modulator as taught by Graves in order to obtain oscillator tuning for the very rapidly changing high frequency components of the control signal (col. 2 lines 6-9 of Graves).

Conclusion

25. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

26. Yao (US Patent 6,661,941 B1) and Hall (US Patent 5,428,700) disclose a method of manipulating a laser source and an apparatus for manipulating a laser source similar to the claimed invention.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to YUANDA ZHANG whose telephone number is (571)270-1439. The examiner can normally be reached on Monday-Friday, 9:00am-5:00pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Minsun Harvey can be reached on 571-272-1835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Yuanda Zhang/
Examiner, Art Unit 2828